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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/469,070

12/21/1999

HANNA E. WITZGALL

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7590

06/04/2004

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EXAMINER

ABDULSELAM, ABBAS I

ART UNIT

PAPER NUMBER

2674

19

DATE MAILED: 06/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/469,070

Applicant(s)

WITZGALL, HANNA E.

Examiner

Abbas I Abdulsalam

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2674

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see # 18, filed on 03/22/04 with respect to the rejection(s) of claim(s) 1-13 under U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Oida et al. (USPN 6232717), Johnson et al. (USPN 6252638) Nakagaki et al. (USPN 6492065), and Kosaka et al. (USPN 5992320).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6 rejected under 35 U.S.C. 103(a) as being unpatentable over Nakayama et al. (USPN 6309073) in view of Oida et al. (USPN 6232717) and Johnson et al. (USPN 6252638).

In regard to claims 1, referring Fig. 1, Nakayama teaches a projection type display apparatus (1) including a light source (2), a color separating optical system (4) for separating a white beam (w) into color beams Red, blue and green (R, G, B), three liquid crystal panels 5R, 5G and 5B as light valves for modulating the color beams, a color synthesizing optical system

(6) for synthesizing the modulated color beams, and a projection lens (7) for magnifying and projecting the synthesized beam on to the screen (8). See col. 6, lines 18-34. Nakayama does not specifically teach the use of a spatial light modulator and a controller. , Nakayama on the other hand teaches "switching control operations", which are performed according to the image information by certain drive means in the liquid crystal panels (5R, 5G, 5B) thereby modulating the color beams that pass through. See col. 7, lines 9-15.

Therefore, it would have been obvious to one having skill in the art at the time the invention was made to utilize Nakayama's light valves (5R, 5G 5B) and switching control operations for the purpose of modulating the color beams, and controlling the modulations respectively. One would have been motivated in view of Nakayama that the use light valves and switching control operations equivalently provide the desired spatial light modulations, and controlling to selectively modulate the light respectively.

Nakayama does not disclose "a color modulator comprised of a stack of at least two dielectric layers and at least three transparent electrodes, wherein a voltage applied to the electrodes limits the wavelengths of light permitted to continue on the light path". Oida teaches a first, second and a third color filter layers (4R, 4G and 4B) which are formed in correspondence to the first, the second and the third X electrodes, and are transparent to red light, green light and blue light respectively. Oida also teaches transparent dielectric layer (5) covering the X electrodes and the color filters, and a dielectric layer (14) covering Y electrodes. See Fig. 11, Fig. 12, col. 17, lines 52-67 and col. 18, lines 1-9

Therefore, it would have been obvious to one having skill in the art at the time the invention was made to modify Nakayama's projection type display system to adapt Oida's color filtering with respect to X and Y electrodes as shown on Fig. 11. One would have been motivated in view of the suggestion in Oida that the color filtering mechanism as configured in Figs. 11-12 is the same as the desired color modulator with two dielectric layers and three transparent electrodes layers. The use of color filtering helps achieve a display system better color fidelity as taught by Oida.

Nakayama does not teach a voltage applied to the electrodes limiting the wavelengths of light permitted to continue on the light path. Johnson on the other hand teaches light in the spectrum F, having a modulation state of polarization $P_{\text{sub.m}}$ and have its polarization state selectively altered depending upon the voltage applied to the modulator (10). See col. 7, lines 12-17.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Nakayama's display system to adapt Johnson's technique of altering a polarization state of a light. One would have been motivated in view of the suggestion in Johnson that selectively altering polarization state light resulting from a voltage application is functionally equivalent to limiting wavelengths of light resulting from voltage application. The use of altering polarization state of light helps function color a display system as taught by Johnson.

Regarding claim 2, Nakayama teaches the color synthesizing optical system (6) consisting of dichroic prism. As shown in Fig. 1, the light valves (5R, 5G, 5B) are located between an illumination optical system (2A) and projection lens (7). See col. 7, lines 49-55.

Regarding claim 3, Nakayama teaches a color synthesizing optical system (6) that is of a mirror composite having dichroic mirrors arranged in "X" shape. See col. 7, lines 49-55.

Regarding claim 4, Nakayama teaches three liquid crystal panels 5R, 5G and 5B as light valves for modulating the color beams, and a color synthesizing optical system (6) for synthesizing the modulated color beams. See col. 6, lines 27-30.

Regarding claim 5, Nakayama teaches projection type display system which includes the use of concave mirror (923) as shown in Fig. 15A.

Regarding claim 6, Nakayama discloses three liquid crystal panels (5R, 5G and 5B) functioning as light valves. See col.6, line 20-34.

3. Claims 7-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakagaki et al. (USPN 6492065) in view of Kosaka et al. (USPN 5992320).

Regarding claims 7, 10 and 11, Nakagaki teaches a method of producing hologram color filter for diffracting and dispensing incident white light into lights of three primary colors of red, green and blue such that the method includes the use of a glass substrate and plurality of layers. See col. 2, lines 50-63, col. 7, lines 20-36 and Fig. 2. Nakagaki discloses a hologram color filter (20) with respect to an application of a voltage corresponding to a picture element between the picture element electrode layer 5 and transparent electrode layer 4 of the incident side. See col. 7, lines 50-60. However, Nakagaki does not teach alternating layers of electrodes and dielectric materials. Kosaka on the other hand teaches a first transfer sheet, which is electrode-forming

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layer, and second transfer sheet, which is a dielectric forming layer. See col. 2, 18-21 and lines 57-62.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Nakagaki's color display unit to adapt Kosaka's electrode forming layer and dielectric forming layer. One would have been motivated in view of the suggestion in Kosaka that the electrode forming and dielectric forming layers can be utilized to achieve the desired "alternating layers of electrodes and dielectric materials". The use of electrode and dielectric forming layers helps form high precision patterns in the display system as taught by Kosaka.

Nakagaki further teaches a hologram color filter 1 comprises three layers of a hologram lens 1B for blue (B), a hologram lens 1G for green (G) and a hologram lens 1R for red (R), wherein white light emitted from a xenon lamp impinges upon the hologram lens 1B of the top layer of the hologram color filter 1 resulting B component being diffracted, then focused and impinges upon the space light modulating element 3 by an operation of the lens. Nakagaki also teaches the diffraction of each of the other two by similar fashion. See col. 1, lines 62-67, col. 2, lines 1-13 and Fig. 1 It would have been obvious to utilize hologram color filter described above with respect to Kosaka's dielectric forming layers in order to achieve "primary color beam of light alternating between three primary colors".

Regarding claims 8 and 12, Kosaka teaches a dielectric-forming layer with respect use of polymers or copolymers or other materials. See col. 13, line 53-65.

Regarding claims 9 and 13, Kosaka teaches pattern-wise electrode-forming layer on a glass substrate. See col. 34, lines 64-67.

Conclusion

4. The prior art made of record and not relied upon is considered to applicant's disclosure.

The following arts are cited for further reference.

U.S. Pat. No. 6,025,898 to Kashiwazaki et al.

U.S. Pat. No. 6,306,509 to Takeuchi et al.

5. Any inquiry concerning this communication or earlier communication from the examiner should be directed to **Abbas Abduselam** whose telephone number is **(703) 305-8591**. The examiner can normally be reached on Monday through Friday (9:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Richard Hjerpe**, can be reached at **(703) 305-4709**.

Any response to this action should be mailed to:

Commissioner of patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314

Hand delivered responses should be brought to Crystal Park II, Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology center 2600 customer Service office whose telephone number is (703) 306-0377.

Abbas Abdulsalam

Examiner

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May 24, 2004



XIAO WU
PRIMARY EXAMINER